LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : PROSIDING

Judul Karya Ilmiah (paper) : Optimization Analysis of Size and Distance of Hexagonal Hole in Castellated Steel Beams
Jumlah Penulis : 3 orang (Listiyono Budi, Sukamta, Windu Partono)
Status Pengusul : ~~penulis pertama~~/ penulis ke 3 / ~~penulis korespodensi~~

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b. Ruang lingkup dan kedalaman pembahasan (30%)	9.00	8.00	8.50
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	7.50	8.50	8.00
d. Kelengkapan unsur dan kualitas penerbit (30%)	9.00	9.00	9.00
Total = (100%)	28.50	28.50	28.50

Penulis ke 3 dari 3 = (28.50 x 40%)/2 = 5.70

Reviewer I

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Prof. Dr. Ir. Sri Tudjono, MS
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a) Daftar isi, peer review lengkap. Seminar diikuti oleh lebih dari 4 negara, dengan keynote dan reviewer dari Eropa, Jepang, Korea serta Indonesia. Susunan topik dalam prosiding juga sesuai dengan bidang
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c) Perilaku balok Castella telah banyak dipelajari, dan sebenarnya riset ini mempunyai potensi untuk dikembangkannya model FEM yang telah tervalidasi sebagai alat simulasi varibel lain pada balok tersebut. Pustaka juga terbatas.
d) Procedia Engineering diterbitkan oleh Elsevier, dan proses menuju penerbitan sangat ketat dan harus ada pernyataan penanggung jawab atas isi prosiding dari beberapa pakar dalam bidangnya. Procedia secara langsung terbit sebagai bagian dari Science direct.com

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Semarang, 11-2-2019
Reviewer

Prof. Dr. Ir. Han Ay Lie, M.Eng.
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Penulis II dari 2 = 0,4/2 x 28.5 = 5,7

Semarang,
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Prof. Dr.Ir. Sri Tudjono, MS.
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Optimization Analysis of Size and Distance of Hexagonal Hole in Castellated Steel Beams (Conference Paper) (Open Access)

Budi, L., Sukamta, Partono, W.

Department of Civil Engineering, Diponegoro University, Semarang, Indonesia

Abstract

View references (10)

This study discusses the size and distance optimization of hexagonal holes in castellated steel beams. The optimization study of castellated steel beams was performed using finite element method (FEM). The results of optimization analysis are then verified by implementing laboratory tested of 225 mm height castellated steel beam specimens. The specimens were modified from 150 mm height IWF section profile. The model of castellated steel beams is divided into six different variation models which represent 45°, 50°, 55°, 60°, 65° and 70° opening angle of hexagonal holes. All castellated steel beam models have 150 mm vertical height holes (ho) and each holes are separated with equal distance varies from 0.042ho to 3.153ho. The results of FEM analysis indicate that the strength of castellated steel beams increase with a factor of 1.938 to 2.041 compare to 150 mm IWF original profile. The optimum results from FEM analysis was a castellated steel beam that has 60° angle size with the optimum hole distance was 0.186ho to 0.266ho. Comparison analysis of laboratory test results and FEM analysis results indicated that the difference between those two approaches are not more than 1.011 with COV (coefficient of variation) value 0.069. © 2017 The Authors.

SciVal Topic Prominence

Topic: Steel | Buckling | Castellated beams

Prominence percentile: 71.843

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The 3rd

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Sustainable Structures for Future Generation

ABSTRACT

September 5, 2016
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Procedia Engineering

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Sustainable Civil Engineering Structures and Construction Materials, SCESCM 2016

Design, material properties and structural performance of sustainable concrete

Harald S. Mueller[a], Michael Haist[a,*], Jack S. Moffatt[a], Michael Vogel[a]

[a]*Institute for Concrete Structures and Building Materials, Karlsruhe Institute of Technology, 76131 Karlsruhe, Germany*

Abstract

Green concretes, also termed eco-concretes, with reduced cement content may provide an alternative for improving concrete sustainability independently of used supplementary cementitious materials. However, to evaluate the sustainability of these new types of concretes not only the ecological impact due to the composition may be regarded but in particular also their technical performance, i.e. their mechanical, physical and chemical properties, have to be taken into consideration. Consequently, this paper introduces first the index Building Material Sustainability Potential, which is applied in combination with the service life prediction for cement-reduced concretes using probabilistic methods. Moreover, the composition of green concretes is indicated, and related test results on the performance of green concretes are presented. The potential of green concrete for applications in practice is shown by the structural performance of graded concrete members being loaded in flexural tests.

Peer-review under responsibility of the organizing committee of SCESCM 2016.

Keywords: sustainability; graded concrete; green concrete; service life design; reliability

1. Introduction

The building industry is affected by the ongoing sustainability debate more than any other industry, due primarily to the pronounced environmental impact resulting from the production of building materials, the erection of buildings and structures and the subsequent use thereof [1]. This holds especially true for concrete structures, as the production of this material – and here especially the production of the raw material cement – is highly energy intensive and the source of substantial emissions of CO_2 resulting from the production process [2].

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Sustainable Civil Engineering Structures and Construction Materials, SCESCM 2016

Effects of temperature and moisture on concrete-PCM interface performance

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[d]*College Civil Engineering and Architecture, Zhejiang University, 866 Yuhangtang Road, Hangzhou 310058, China*

Abstract

There is a lack of study on effects of temperature and moisture on concrete-polymer cementitious mortar (PCM) interface mechanical properties. This paper briefly introduces the outcomes of two studies; one on effects of exposure with elevated temperature and moisture and the other with freezing and thawing temperature cycles and moisture. The former show that there are significant effects of elevated temperature on both tensile and shear bond strength and that there are small effects of moisture. The bond strength can be estimated by the proposed formula with a function of constituent material strengths after the exposure. On the other hand, the latter show that the tensile bond strength decreases with freeze thaw cycles (FTC), although PCM does not show the reduction with FTC. It is considered that the tensile bond strength reduction is caused by moisture effects on the interface.

Peer-review under responsibility of the organizing committee of SCESCM 2016.

Keywords: Concrete; PCM; interface; bond strength; temperature effect; moisture effect

1. Introduction

Cementitious materials for patching/overlaying of existing concrete structures have been widely used in the world. Generally, materials for patching/overlaying are required to be more durable and have better mechanical property than concrete substrate because of objectives of patching/overlaying. Besides, the thickness of materials is

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Societal burden and engineering challenges of ageing infrastructure

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Abstract

Ageing is an inherent feature of nature and, hence, of materials, structures and systems. Yet, it seems a rather new topic in both science and engineering. The main reason for increasing attention for ageing as a topic is the growing awareness that, particularly in industrialized countries, ageing of our assets is a financial burden for the society. It touches our environment and a country's economy. It affects the overall sustainability of our planet and deserves, therefore, our utmost attention. In this contribution the urgency and challenges of ageing of concrete structures are addressed. Recent estimates of the extent of the issue and how ageing problems are dealt with in different disciplines, reactive or pro-active, are mentioned. The complexity of ageing problems will be evaluated by looking in more detail to the evolution in concrete mix design and the consequences thereof for the long-term performance of concrete structures. In this evaluation different kinds of driving forces contributing to ageing will be identified. Emphasis will be on ageing of concrete infrastructure and the need of research on ageing phenomena will be addressed.

Peer-review under responsibility of the organizing committee of SCESCM 2016.

Keywords: ageing; infrastructure; risks; societal impact; concrete; research investment.

1. Infrastructure – Backbone of a country's prosperity

Architecture has been defined as the *art* and *science* of *designing* and *constructing* buildings and other physical structures for human shelter or use. In this definition the word shelter is meant in the broadest sense of the term. Going back to ancient times people needed shelter for protection against storms, rain and snow, direct sun shine and cold weather. For protection against hostile tribes cities were built surrounded by massive city walls. Dykes were built to protect against floods. Besides the need for shelter an increasing need for mobility emerged. For mobility of people roads and waterways were built. Aqueducts were built to transport water over long distances. With the

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Smart graphene oxide based composite materials and their electric and magnetic stimuli-response

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Abstract

Compared to graphene, the functional groups of graphene oxide (GO) widen its application along with its GO-based composites in various engineering areas. Here, we briefly review their relatively new applications to the areas of both electrorheological (ER) and magnetorheological (MR) fluids under external electric or magnetic fields, respectively when they are dispersed in electrically or magnetically inert medium fluids. All the GO composites are found to exhibit improved ER characteristics compared to that of pure GO, while the GO can be adopted as either a coating layer or an additive in the carbonyl iron based MR fluids.

Peer-review under responsibility of the organizing committee of SCESCM 2016.
Keywords: Graphene oxide, GO-based composites, electrorheological, magnetorheological.

1. Introduction

Both electrorheological (ER) and magnetorheological (MR) fluids, known to be a type of the most significant smart stimuli-responsive materials, which are in general composed of electrically polarizable particles or magnetic particles dispersed in insulating liquid medium, can be controlled by an external electric field or magnetic field, respectively [1-5]. The dispersed particles in the ER fluids can become polarized under an external electric field, to be connected to the neighboring ones forming chain-like structures along the applied electric field direction [6, 7]. On the other hand, the magnetic particles dispersed in the MR fluids shows a similar behavior in the presence of the magnetic field [8, 9]. These structural changes result in the ER and MR fluids, transforming from a liquid-like to a solid-like state within a millisecond upon the applied electric or magnetic fields, and these behaviors are reversible with the fields

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Sustainable Civil Engineering Structures and Construction Materials, SCESCM 2016

Impact factors on the cost calculation for building services within the built environment

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Abstract

Different building epochs, materials and styles challenge planners and furthermore executing companies to define the required services upfront. The presumptions made, often differ from the real conditions on site (building substance), so that additional investigations in advance would be helpful, to gain more knowledge on the existing structure. These deviations then demand additional services on site, which are usually not listed in the bills of quantities and lead to budget overruns. Clients can cushion such overruns through reserves in the budget, but how do contractors deal with those uncertainties in their calculation? To investigate if and how these risks of differing construction and site conditions affect their bids of contractors, quantitative research has been applied and a survey has been conducted. The trend shows, that not the cost component of labour work increases, but is calculated into the prices for materials in order to hide those additional costs. Uncertainties in construction works on existing buildings will always be difficult to evaluate. To minimize the risks of running an unprofitable construction site, employers have the possibility to work with a flexible budget, but contractors can only act to uncertainties and additionally required services with claiming.

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Keywords: building in existing; built environment; cost control; cost calculation of building services; building stock; building substance; refurbishment of existing buildings, retrofitting; built environment; cost calculation; building services in the built environment; building stock; impact factors on the construction cost calculation; uncertainties in the cost calculation

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Sustainable Civil Engineering Structures and Construction Materials, SCESCM 2016

Use of life cycle assessments in the construction sector: critical review

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Abstract

A life cycle assessment (LCA) is an internationally accepted and useful tool to assess the environmental impact of products. In this paper, the use of LCA in the construction sector has been critically analyzed. The analysis is based on specific literature cases and different standards and frameworks. As an example, a detailed comparison of four LCA studies for structural concrete is presented. LCA is one of the most promising techniques for an ecological design of products. However, in order to appeal to the benefits of LCA, it is important to know how to use LCA properly. From the review in this article it becomes clear that the LCA research is still in a fragmented state, due to the existence of various unspecific guidelines and different interpretations of those guidelines. Since for example the international standards on LCA, ISO 14040/44, only provide a global framework, and no exact technique to calculate environmental impacts, it is possible to create an LCA with different boundary conditions. Hence, a valuable comparison between distinct LCAs is difficult. Comparisons should thus thoughtfully be performed, taking into account all information about the LCAs under study. When this background information is communicated transparently, LCAs can be interpreted correctly.

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Keywords: Construction sector; life cycle assessment; ecology; sustainability; EPD; review.

1. Introduction

According to the United Nations Environment Programme (UNEP) three planets will be necessary by 2050 to bear the world consumption and our way of life. This will be the case if the current consumption and production is

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Significant factors to motivate small and medium enterprise (SME) construction firms in the Philippines to implement ISO9001:2008

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Abstract

Motivating SME-based construction firms to adopt different management systems is not a simple task, especially if they are not aware of the benefits that they will gain from the new process-based management system. The implementation of ISO 9001:2008 Quality Management System in the construction industry is an ongoing trend, more so in the Small and Medium Enterprise. However, the level of awareness and readiness of the construction industry in the Philippines is still low as compared to the neighboring countries in Asia and in the western countries where ISO 9001:2008 originated. The purpose of this research is to determine the significant factors that will motivate SME-based construction firms in the Philippines to implement ISO 9001:2008. A field study was conducted on SME based construction firms in the Philippines, wherein a total of 139 respondents out of the 613 SME-based construction firms in CALABARZON areas were surveyed. Results reveal that the three main factors that will motivate SME-based construction firms to implement ISO 9001:2008 are (1) if required by their clients, (2) to qualify for bidding and (3) to increase customer satisfaction. Therefore, based on the results and findings, a certification of ISO 9001:2008 from an accredited auditor shall be required by clients as a constituent in accrediting SME-based construction firms and to qualify for bidding.

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Keywords: ISO 9002:2008; Quality Management Systems (QMS); Small Medium Enterprise (SME).

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Implementation, management, and cost of the clean water act and storm water pollution prevention plan

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Abstract

This research is a retrospective case study designed to document the implementation, and management decisions made about a Storm Water Pollution Prevention Plan (SWPPP) for a wastewater project in California. For this study, the project manager and qualified storm water pollution prevention practitioner (QSP) agreed to extensive interviews about the decisions made and associated costs. Through laws and regulations, constructors are required to take precautionary measures to ensure pollutants stay on jobsites as opposed to running into the storm water system. Moreover, from a practical standpoint, such research might be particularly useful for addressing the challenges constructors are having with the more stringent sustainability regulations. This study used a retrospective case study as part of an exploratory qualitative research strategy for examining the costs associated with storm water pollution prevention on a twenty acre, $48,000,000 wastewater project that had a construction schedule of two years. Cost analysis was taken from historical data and was applied in a quantity takeoff. This study was aimed at documenting some practical features of the actual implementation, management, and cost in this particular case. Results indicate the primary roles of the QSP for this project and the SWPPP cost for this project was 0.46% of the total project cost.

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Keywords: Construction Management; Costing; Storm Water Pollution Prevention Plan (SWPPP); Clean Water Act (CWA); Qualified SWPPP Practitioner (QSP)

1. Introduction

Urbanization has caused the natural environment to be uprooted all around the world. When soil is disturbed, rain and snow melt events pick up pollutants and distribute them into our waters. The flowing water from these occasions

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